



September 17, 2018

Mr. Rick Jardine  
On-Scene Coordinator  
U.S. Environmental Protection Agency Region 4  
Sam Nunn Atlanta Federal Center  
61 Forsyth Street  
Atlanta, Georgia 30303

**Subject: Birmingham Board of Education Sampling and Removal Report, Rev. 0  
35<sup>th</sup> Avenue Superfund Site  
Technical Direction Document (TDD) No. 0002/OT-02-002  
Contract No. EP-S4-15-01**

Dear Mr. Jardine:

Oneida Total Integrated Enterprises (OTIE), Superfund Technical Assessment Response Team (START) has prepared this letter report detailing activities conducted at Birmingham Board of Education properties located within the study boundaries of the 35th Avenue Superfund site (the Site) located in Birmingham, Jefferson County, Alabama (Figure 1). The work was performed in support of the U.S. Environmental Protection Agency (USEPA) under Contract Number (No.) EP-S4-15-01, TDD No. 0002/OT-02-002.

The scope of the work was to conduct sampling and analysis activities in support of a Removal Site Evaluation (RSE) and Time-Critical Removal Action (TCRA) at the Site. Specifically, START was tasked to conduct surface soil and depth sampling at Birmingham Board of Education properties to identify the nature and extent of hazardous constituents associated with historic or current operations at the Site or nearby facilities.

The work performed under this project consisted of START (OTIE) personnel documenting field activities with logbook notes and digital photographs, collecting surface soil and depth samples (up to 24 inches below ground surface [bgs]), screening soils (coarse and fine fractions) for metals concentrations using a Niton<sup>®</sup> XL3t handheld X-Ray Fluorescence (XRF) instrument, and submitting samples for laboratory analyses. Soil samples collected as part of the RSE were submitted to TestAmerica Laboratories (TestAmerica), Savannah, Georgia for low-level polycyclic aromatic hydrocarbons (PAHs), and/or Resource Conservation and Recovery Act (RCRA) metals. A subset of the samples was also

analyzed for TCL semivolatile organic compounds (SVOC) or polychlorinated biphenyls (PCB). Soil samples collected as part of the Depth Sampling efforts were submitted to either TestAmerica or Contract Laboratory Program (CLP) laboratories for low-level PAHs, total arsenic, total lead, total aluminum, and/or total iron analyses.

All activities and procedures conducted by START were performed in accordance with the EPA Region 4 Science and Ecosystem Support Division (SESD) Field Branches Quality System and Technical Procedures (FBQSTP) and the site-specific Quality Assurance Project Plan (QAPP)/Site Sampling Plan (SSP).

### **Site Description**

The Site encompasses three residential neighborhoods: Fairmont, Collegeville, and Harriman Park; in Birmingham, Jefferson County Alabama (Figure 1). The Fairmont neighborhood comprises the western portion of the Site, Collegeville the southern portion, and Harriman Park the eastern portion. The geographic coordinates for an approximate center point of the Site are 33.553123 North latitude and - 86.806847 West longitude.

For the purpose of this letter report, the Site information will be narrowed to only include the Birmingham Board of Education properties located at 3310 30th Way N., 3324 30th Way N., 3025 33rd Ave. N., 3043 33rd Ave. N., 3049 33rd Terr. N., 3111 33rd Terr. N., 226 Huntsville Rd., 3300 Huntsville Rd., 3400 33rd Terr. N., 3415 Huntsville Rd., 3546 33rd Terr. N., 3419 Huntsville Rd., and 3101 44th Ave. N. (Figure 2).

### **Location Description**

This evaluation focused on 13 Birmingham Board of Education owned parcels (012200133001024000, 012200133001022000, 012200133001038000, 012200133001037000, 012200133001002000, 012200133001001000, 012200131010001000, 012200134008002000, 012200134008001000, 012200131009002000, 012300182004029000, 012200131009001000, 012200124002003000) (Figure 2). For sampling purposes, the parcels were labeled CV-0013, CV-0014, CV-0283, CV-0284, CV-0506, CV-0509, CV-0511, CV-0610, CV-0613, CV-0627, CV-0895, HP-0320, and FM-0165).

As part of the RSE, the number of composite surface soil (0 to 4 inches bgs) samples collected per parcel was based on the size of the parcel as indicated by the Jefferson County Tax Assessor's Office. Each sampling location was comprised of <5,000 square feet. Grab surface soil samples were collected from

apparent exposure pathways where active play sets are located, low-lying areas, and/or drainage areas. Paved areas, soil under stationary fixed structures, and areas influenced with drip lines and burn areas were not sampled. Each field sampling team used a Trimble® Global Positioning System (GPS) instrument equipped with ESRI ArcMap® to identify the boundary for each parcel investigated and the area comprising each sampling location. The sample location coordinates (in decimal degree format) for all soil aliquots were collected and recorded using a Trimble®.

Samples collected as part of the Depth Sampling efforts were from the same aliquot locations sampled during the RSE. Each field sampling team used a Trimble® GPS instrument equipped with ESRI ArcMap® to navigate to each of the geographic coordinates for surface soil aliquots sampled during the RSE. Geographic coordinates for sampling locations are presented in Table 1.

## **Soil Sampling Activities**

### *Removal Site Evaluation*

A total of 240 surface soil samples (221 field samples and 19 field duplicates) were collected from 12 Birmingham Board of Education parcels in December 2012, January 2013, and March 2013. Locations CV0509Y, CV0511AB, CV0613E, and CV0627B were resampled during depth sampling for confirmation purposes in October 2014 and January 2015.

One additional sample was collected from Board of Education property CV-0895 in September 2015.

Composite soil samples were collected from 0 to 4 inches bgs using stainless steel spoons. Where encountered, sod or grass turf was first scrapped off with a flat shovel prior to sampling. Sampling jars were filled with the minimum soil volume needed to conduct the necessary analysis. Any remaining sample volume, and scrapped sod or grass turf, was returned to the individual aliquot points.

The coarse fraction of the samples collected in December 2012, January 2013, and March 2013 was screened ex situ for RCRA metals using an XRF instrument and submitted to TestAmerica for PAH analysis in accordance with SW846-8270C (analysis of the complete SVOC TCL was requested for two of these samples; PCBs was requested for four samples). A portion of 137 field samples were sieved using a 2-millimeter sieve (fine fraction) and screened to assess the lead uptake of the contamination. In order to confirm XRF screening results, a subset of the samples (coarse or fine fractions) was submitted to TestAmerica for RCRA metals analysis in accordance with SW846-6010C/7471B.

Surface samples collected as part of the depth sampling efforts were submitted for PAH analysis in accordance with either SW846-8270D (TestAmerica) or SOM02.3 (CLP) and/or metals (aluminum, arsenic, iron, and/or lead) analysis in accordance with either SW846-6010C (TestAmerica) or ILM02.3 (CLP)

A summary of the samples collected as part of this work and the laboratory project numbers for each of the samples analyzed is presented in Table 2.

### Depth Sampling

A total of 122 depth samples (112 field samples and 10 field duplicates) were collected in October 2014, January 2015, and August 2015 to determine the vertical extent of contamination in the soil of 31 locations (CV0509KK, CV0509T, CV0509X, CV0511A, CV0511AA, CV0511AB, CV0511AB3, CV0511BBB, CV0511D, CV0511FF, CV0511G, CV0511GGG, CV0511H, CV0511HHH, CV0511NN, CV0511P, CV0511Q, CV0511S, CV0511SS, CV0511TT, CV0511X, CV0511XX, CV0511Y, CV0511Z, CV0613A, CV0613B, CV0627B, HP0320C, HP0320E, HP0320J, and HP0320K) where surface sampling results indicated elevated concentrations of contaminants of concern. Depth samples were collected from the 6-inch, 12-inch, 18-inch, and 24-inch bgs depths at each aliquot location previously assessed for the location. Where encountered, sod or grass turf was first scrapped off with a flat shovel prior to sampling. A clean and decontaminated hand auger bucket was used to auger to 6 inches bgs at each aliquot point for a sample. Once the sampling depth was reached, a second clean and decontaminated auger bucket was used to collect sample material from each aliquot comprising the 6-inch depth composite sample. Following sample collection, the same auger bucket was used to auger down to 12-inch sampling depth. Once that sampling depth was reached, a third clean and decontaminated auger bucket was used to collect sample material from 12-inch depth. The process of hand augering to the desired depth and using a clean and decontaminated auger bucket to collect the sample was repeated for the 18- and 24-inch depth samples. Auger refusal was sporadically encountered at varying depths throughout the Site. In response to field conditions, the exact number of aliquots per sample was determined in the field.

Soil from each aliquot at each sample depth was placed on dedicated plastic sheeting and logged with photographs and notes. The aliquots for each depth sample were then homogenized in a stainless steel bowl using a stainless steel spoon, and containerized for TestAmerica laboratory PAH analysis in accordance with either SW846-8270D and metals (aluminum, arsenic, iron, and/or lead) analysis in accordance with either SW846-6010C. Sampling jars were filled with the minimum soil volume needed to conduct the necessary analysis. Any remaining sample volume, and scrapped sod or grass turf, was

returned to the individual aliquot points. A summary of the samples collected as part of the depth sampling efforts and the laboratory project numbers for each of the samples analyzed is presented in Table 2.

## Results

To assess the significance of the laboratory results, soil samples were compared to site-specific cleanup goals for the project based on the Region 4 Removal Management Levels (RML) for residential soil either updated 2014 or 2017. A summary of the laboratory samples by parcel is provided in Tables 3 to 15. Depth sampling results are summarized in Table 16.

The results and conclusions are summarized as follows:

- XRF screening results indicated the presence of lead and arsenic at concentrations exceeding the cleanup goal for the Site in one surface soil sample collected from CV0511Z. Arsenic was detected at a concentration of 74 parts per million (ppm) while lead was detected at a concentration of 716 ppm.
- Laboratory metals analysis indicated the presence of arsenic at concentrations exceeding the cleanup goal for the Site in two surface soil samples collected at CV0511S. Arsenic concentrations were 79 milligrams per kilogram (mg/kg) for the coarse sample and 70 mg/kg for the fine fraction.
- Laboratory PAH analysis indicated the presence of Benzo(a)Pyrene and Benzo(a)Pyrene Total Equivalence Quotient (BaP TEQ) concentrations exceeding the cleanup goal for the Site in surface soils collected from 17 locations (three in CV-0509, six in CV-0511, two in CV-0613, one in CV-0627, four in HP-0320, and one in FM-0165). Eleven (11) locations had only a BaP TEQ exceedance while six had both a Benzo(a)pyrene and BaP TEQ exceedance. Benzo(a)pyrene results above the cleanup goal ranged in concentration from 1.7 J mg/kg in the sample collected from CV0509T to 240 mg/kg in the sample collected from CV0511AB. BaP TEQ results above the cleanup goal ranged in concentration from 1.58 mg/kg in CV0509KK to 340 mg/kg in CV0511AB.
- Laboratory results for depth samples collected beyond 4 inches bgs and to a maximum of 24 inches bgs indicated the presence of BaP TEQ and arsenic concentrations in exceedance of the

cleanup goal in eight locations (CV0509X, CV0511AA, CV0511D, CV0511S, CV0511Z, CV0613A, CV0613B, and HP0320K).

Electronic copies of the laboratory reports and the START Data Validation Memos prepared for each of the packages are included as an attachment to this report.

## **Conclusion**

START collected a total of 369 soil samples from 223 sampling locations located on 13 parcels owned by the Birmingham Board of Education. XRF screening and/or laboratory analytical results for surface soils indicated two locations with exceedances for metals (CV0511S, CV0511Z). Laboratory analytical results showed 14 locations (CV0509KK, CV0509T, CV0509X, CV0511AB, CV0511AA, CV0511D, CV0613A, CV0613B, CV0627B, HP0320C, HP0320E, HP0320J, HP0320K, and FM0165F) with PAH exceedances, specifically BaP TEQ. Depth sampling was performed as part of the TCRA to assess vertical extent of contamination in all of these locations.

Removal actions have been completed on all Birmingham Board of Education property locations that exceeded project cleanup goals except for FM0165F at the Former Riggins School and CV0511 locations at the former Calloway School. FM0165F will be addressed as part of Phase 4 of the TCRA and the CV0511 locations will be addressed at the completion of the TCRA. The action taken by the EPA is protective of human health.

If you have any questions or comments regarding this letter report or require any additional information please feel free to contact me or Russell Henderson, START Project Manager, at 678-355-5550.

Sincerely,

A handwritten signature in black ink, appearing to read "Russell Henderson", with a long horizontal flourish extending to the right.

Russell Henderson  
START Project Manager  
OTIE

cc: Russell Henderson, START Project Manager  
Katrina Jones, EPA Project Officer  
Darryl Walker, EPA Project Officer  
OTIE START File

Enclosures: Figures, Tables, Photo Log, Logbook Notes, Laboratory Analytical Reports

## FIGURES

## TABLES



## **PHOTO LOG**

## **LOGBOOK NOTES**

## **LABORATORY ANALYTICAL REPORTS**